

ABSTRACT OF THE DISCLOSURE

Two or more triangular apertures are employed to pass radiation from a source to a detector to reduce the amount of stray radiation received by the detector. Preferably, the two apertures are equilateral triangles oriented at 60° rotated relative to each other and have dimensions proportional to their distances from the detector. A Bessel filter is employed to reduce the effect of flicker and other rapid changes in intensity in the radiance from the source. The output of the sensor is integrated and sampled at sampling time intervals that are powers of two of time, and a reading is provided when the output of the integrator exceeds the same threshold under all radiation source intensity conditions so that the meter has a substantially constant resolution at different signal levels. Where the radiation from the source is transmitted or reflected by the sample before such radiation is detected by the detector, the instrument becomes a transmissometer or reflectometer.